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ABSTRACT

Different research traditions on social cognition are reviewed to determine how they can be used in the study of classroom life. A structural-developmental perspective is more applicable to the study of the social cognitive outcomes of schooling than to the explanation of student behavior in the classroom. The information processing approach should be applicable to research on teachers' thinking and the knowledge structures that students construct from their social experiences at school. Attribution theory research provides a promising, new perspective for analyzing how classroom processes influence the motivation of students. Ethnomethodology, a sociological approach that examines social interactions to determine social structures, offers interesting hypotheses but must find ways to draw convincing inferences about the social cognitive processes. A good theory for directing research on this issue is both social and cognitive, and should consider the contextual, environmental factors that influence students' thinking. (CJ)

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# Ecological Theory of Teaching

APPLYING FOUR SOCIAL-COGNITIVE PERSPECTIVES TO THE STUDY OF CLASSROOM LIFE

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# APPLYING FOUR SOCIAL-COGNITIVE PERSPECTIVES TO THE STUDY OF CLASSROOM LIFE

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## Introduction

### Background Information

This paper represents one facet of the Ecological Theory of Teaching project being conducted at the Far West Laboratory for Educational Research and Development. The primary goal of this project is to develop a theory of teaching that approaches and views classroom teaching and learning from ecological perspectives. A holistic, multi-disciplinary approach is being used in which theory development is informed by several disciplines as well as by educational psychology. Three perspectives have been identified and are currently being developed by the staff. These perspectives are: 1) the activity structures perspective (after Bossert, 1979); 2) the student participation perspective; and 3) the social-cognitive perspective. A recent description of these perspectives can be found in Tikunoff, Ward, Mergendoller, and Swarthout (1979).

In this paper, the focus will be on the social-cognitive perspective. One of the initial attempts made by the project to apply the social-cognitive perspective was reported by Swarthout (1979). Swarthout conducted a literature review of social-cognitive theory and research. In what follows, the reader will find an expanded, updated version of that initial review. In addition,

Swarthout (1979) conducted a secondary analysis of data gathered in an ethnographic study of three fourth-grade classrooms. The primary analysis of these data has been reported elsewhere (Tikunoff and Ward, 1978). Whenever appropriate, the results of this secondary analysis will be discussed below.

More recently, the EcoTheory staff has applied the social-cognitive perspective along with several others as part of an ecological study of five classrooms. Because of the exploratory nature of this investigation, no substantive findings will be reported in this paper. However, what was learned from planning and conducting this study will be evident in the following pages.

Having described the context from which this paper emerged, we turn now to an overview of the question to be addressed in this paper.

## Scope

The purpose of this paper is to answer the following question: In what ways can the basic knowledge of social cognition which exists in the social sciences be applied to the study of classroom life? Each part of this question deserves comment. The following clarifications should serve to introduce what will be covered in the following overview of social cognition.

In what ways. There are several ways in which the social-cognitive perspective can be used by educational researchers. Since the range of possible applications is quite diverse, there will be no attempt in this paper to present an exhaustive analysis of the possibilities. Rather, the focus will be on the two ways of thinking about classroom life which have guided the research activities of the EcoTheory project.

One way to apply the social-cognitive perspective is to examine how social-cognitive processes mediate behavior in the classroom. The vast majority of social cognitivists assume that people's behavior cannot be understood without considering their social-cognitive activities. If this assumption is correct,

educational researchers need to find out what is going on in the heads of students and teachers if they are to understand what takes place in classrooms and schools.

A second application of the social-cognitive perspective is to consider the social-cognitive outcomes resulting from participation in various educational environments. Social cognitivists agree that when people interact with their environment, there are long-term effects on their thinking. Within the literature on social cognition, a number of different terms have been used to describe these cognitive outcomes. Some examples are the following: social knowledge (Damon, 1977, 1979; Gerson and Damon, 1978); scripts (Abelson, 1976; Schank and Abelson, 1977); knowledge structures (Nisbett and Ross, 1980); social concepts (Turiel, 1978a, b); and social-cognitive capabilities (Selman and Jaquette, 1978). Most of these theoretical constructs are discussed below. In sum, the social-cognitive perspective provides a number of promising conceptualizations of the outcomes of students' socialization experiences in the classroom.

Basic knowledge. The emphasis in this paper will be on basic theory and research. That is, most of the literature to be reviewed was not written for an educational audience. Rather, most social-cognitive research is read by scholars who are not interested in applying their work to educational settings.

In addition, it should be noted that more attention will be paid to theoretical knowledge than to empirical knowledge. It would be well beyond the scope of this paper to review all of the research which has been conducted by investigators interested in social cognition. However, it is possible to present the major ideas which have guided empirical work in this field. Thus, "basic knowledge" is being defined herein as the major assumptions which provide

direction for the research conducted by social cognitivists.

Social cognition. There is growing evidence that the topic of "social cognition" has become very popular within the past few years. Within developmental psychology, for example, Damon (1979) has stated that as "an area of study, the development of children's social cognition is quickly becoming a 'hot topic'" (p. 206). Similarly, Glick (1978) has referred to social cognition as "one of the more popular topics of developmentalists' concern" (p. 1). Social psychologists such as DeSoto (1979) have also noted the recent increase in research focusing on social cognition.

There are several explanations for the increasing popularity of social cognition as a topic for investigation. Throughout this paper, various reasons for studying social-cognitive issues will be emphasized. One goal of this paper is to convince the reader that the growing interest in social cognition is warranted.

Although there seems to be agreement that social cognition is a "hot topic," there is less consensus over what the term refers to. Much of the disagreement seems to focus on whether the field should be defined broadly to include a wide range of phenomena or whether the definition of social cognition should be more narrow in scope. On the one hand, several reviewers (e.g., Shantz, 1975; Wegner and Vallacher, 1977) have restricted the field of social cognition to the study of how and what people think about other people. On the other hand, other reviewers (Flavell, 1977; Wyer and Carlston, 1979) have preferred a broader definition which includes self-concept as a social-cognitive phenomenon.

The broader definition will be used in this paper. We have chosen to adopt the following definition offered by Flavell (1977):

> Social cognition can be defined as any sort of cognition that takes human psychological and social phenomena as its object. It therefore includes our conceptions ("naive theories"), knowledge, inferences, and observations concerning our own and other people's feelings, perceptions, motives, intentions, thoughts, personality traits, social interactions, moral and other norms (social, legal), and numerous other contents of our social world. (p. 43).

It is worth noting that this broad definition of social cognition means that the social-cognitive perspective is similar to the phenomenological orientation within the social sciences. However, there are two noteworthy differences betwen the two perspectives. First, as the term implies, social cognition does not refer to non-social experiences. The social cognitivist is interested in thinking which takes place in or about social settings, while the phenomenologist is interested in experiences in any kind of setting. Second, the social cognitivist focuses on the cognitive dimension of experience. In contrast, phenomenology is concerned with all aspects of experience.

Exists in the Social Sciences. Given the broad definition of social cognition adopted in this paper, the literature in a number of disciplines can be examined to find relevant material. Social scientists in the fields of psychology, sociology, anthropology, and sociolinguistics have something to say about social cognition. To some extent, attention will be paid to all of these disciplines.

However, a systematic treatment of the literature in each of the social sciences will not be attempted. Rather, the emphasis will be on the following sub-disciplines of psychology: developmental, cognitive, and social psychology. In addition, one of the traditions within sociology (ethnomethodology) will be discussed in detail. Although other approaches within the social sciences (e.g., social learning theory, symbolic interactionism, sociolinguistics) have something to say about social cognition, they will not be discussed.

Be Applied to the Study of Classroom Life. This paper is written for an audience of educational researchers. Although the four social-cognitive perspective(s) can be applied in ways which are of interest to teachers and other educational practitioners, these potential applications will not be emphasized. Rather, the focus will be on the value of social-cognitive theory and research for investigators interested in classroom processes.

Having clarified the purpose and scope of this paper, we turn now to a review of the social-cognitive literature. In this overview of the field, the distinctiveness of various approaches to social cognition will be emphasized. The approach taken in this paper is that the literature on social cognition is diverse and fragmented and that there are a number of different ways to think about social cognition. The following four approaches to the study of social cognition will be described: the structural-developmental approach, the information-processing perspective, attribution theory, and ethnomethodology. We begin with a discussion of the structural-developmental approach.

## The Structural-Developmental Perspective

### Overview

In essence, this approach involves the application of Piaget's theory of cognitive development to the question of how children think about social phenomena. As Cooney and Selman (1978) have pointed out, the "hallmark" of structural-developmental research "is an interest in describing an invariant sequence of cognitively based stages, or qualitatively distinct ways of organizing and understanding a certain domain of experience, through which all children develop" (p. 25). This perspective can be contrasted with other approaches by its emphasis on the underlying structure of cognition

rather than on its content. Instead of focusing on situational or individual differences, the Piagetian researcher focuses on universal patterns. Structural-developmentalists are interested in the "patterns of thinking rather than on emotions or behavior" (Cooney and Selman, p. 25).

Until recently, Piagetian researchers interested in social cognition have focused on either moral reasoning (Kohlberg, 1969, 1976; Piaget, 1932) or role-taking (Flavell et. al., 1978, 1968; Selman, 1976). Within the past few years, the structural-developmental perspective has been applied to a wide range of topics including the following: social rules and conventions (Turiel, 1975; 1978a, b), societal institutions (Furth, 1980), friendship relations (Damon, 1977; Selman, in press), authority relations (Damon, 1977), the social perspectives of others (Selman and Byrne, 1974), and the self (Broughton, 1978).

Each of these investigations share the common goal of discribing an invariant sequence of social-cognitive stages through which all children pass as they develop. In sum, the structural-developmental perspective focuses on the Piagetian concepts of stage and sequence.

Although social cognition is a burgeoning area of research within developmental psychology, there have been few attempts to apply this knowledge to the study of classroom life. Two possible applications of the structural-developmental perspective are discussed below.

## Social-Cognitive Outcomes of Schooling

Recent Research--Although Piagetian researchers agree that the aim of their research is to describe how children's knowledge of their social world develops, there is considerable disagreement about how that knowledge is organized. As Selman, Jaquette, and Lavin (1977) have written, "There are as many ways to map social cognition as there are map makers" (p. 266). In order

to appreciate the diversity of opinion on this issue, it is worth noting some of the alternative conceptualizations which can be found in the literature.

On the one hand, certain structuralists (Mischel, 1974; Chandler, 1977; Broughton, 1978) have argued that all knowledge is organized in a similar fashion and therefore there is no reason to distinguish between physical and social knowledge. Within the information-processing literature, a similar position has been proposed by Simon (1976) who has argued that the cognitive processes examined in the study of non-social cognition are identical to the processes used to understand social phenomena. As Simon (1976) puts it, we "neither need nor want separate theories of social thinking and other (anti-social?) thinking. We simply need a theory of thinking" (p. 254).

In contrast, other theorists have argued that domains of knowledge must be distinguished. Among the advocates of this position are Glick (1978) and Damon (1979). For example, Damon (1979) argues that the physical world is different from the social world in that people establish "mutually intentional relations" with each other. "Such relations are composed of an ongoing series of interactions in the course of which the subject shares perspectives and coordinates actions and relations with the other" (Damon, 1979, p. 208). Because social life requires mutuality between subject and object, social experience leads to an understanding which is different from knowledge of physical objects. As Damon (1979) points out, the importance of social cognition as a topic within developmental psychology depends on the extent to which knowledge of the physical world differs from knowledge of social objects (e.g., people, norms, interpersonal relationships).

As Damon (1979) recommends, his argument can be extended by distinguishing types of knowledge or issues within the social domain. For example, Turiel (1975) has drawn a distinction between social conventions and morality. More

recently, he has proposed that there are three distinct domains of social knowledge. According to Turiel (1978a, 1978b), social concepts and experiences can be classified as either moral, societal, or psychological. Similarly, Selman and Jaquette (1978) have distinguished three types of interpersonal understanding: conceptions of peer-group relations, conceptions of close dyadic relationships, and conceptions of individuals. In these "maps" of social cognition, it is assumed that social events are organized differently, require different sorts of understanding, and lead to different kinds of knowledge (concepts).

It is worth noting that the new wave of structural-developmental research focusing on social cognition can be viewed as an attempt to eliminate an ambiguity in Piaget's work. On the one hand, Piaget has frequently been criticized for inadequately capturing the environmental side of organism-environment interactions. As Damon (1979) has argued, this criticism is justified when one looks at much of Piaget's research which tends to portray children as working out their concepts in nonsocial contexts. On the other hand, this criticism is unjustified when one considers Piaget's theoretical writings in which development is explained in a truly interactive fashion.

According to Damon (1979), recent work within the structural-developmental tradition is more consistent with Piaget's theory and is correcting the previous tendency of structural-developmental researchers to ignore the role of the social environment in cognitive development. Most of the recent Piagetian studies of social cognition assume that each social concept constructed by the child has a different experiential origin and that it is possible to distinguish experiences that are likely to stimulate one type of conceptual development from experiences which are likely to lead to growth in a different domain of social knowledge. Two recent studies (Nucci and Turiel, 1978; Schweder and Much, 1978)

illustrate this new trend by demonstrating that in nursery school settings, moral events differ in a number of ways from social-conventional events. In short, this recent work by structural-developmentalists interested in social cognition is beginning to place equal emphasis on the "social" and "cognitive" aspects of social knowledge.

This brief review of social-cognitive research within the structural-developmental tradition suggests a new direction for research on classrooms. In what follows, I would like to propose that there is a need for research which looks at the social-cognitive outcomes of schooling and that the structural-developmental perspective provides a potentially useful way, to study this problem. The discussion begins with Bidwell's distinction between moral and technical socialization.

Technical versus Moral Socialization--This distinction has been proposed by Bidwell (1972). According to Bidwell,

> Socialization and schooling can be thought of as having two principal aspects. The first is technical socialization: developing intellectual and motor skills and learning items of information and systems of thought that organize them. The second is moral socialization. In moral socialization, the person acquires values and goals for conduct, learns and becomes responsive to moral rules (norms), and gains a view of the social world as a moral order (page 1).

Previous educational research has focused almost exclusively on the former and ignored the latter. For example, Hartup (1979) has pointed out that the school is a social world of major importance for children in Western cultures. "Nevertheless, the school as a social system has not been well described in relation to the growth of social competence in the individual child. Given

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The author is grateful to William Tikunoff for recommending that this distinction be used when applying the social-cognitive perspective to the classroom.

the extent to which the school is used as a socializing agency, our lack of knowledge concerning its social dimensions is shocking" (Hartup, 1978, p. 946). In sum, little is known about how the non-technical aspects of schooling influence students.

The emphasis which educational researchers have placed on technical socialization may be somewhat disproportional to its importance within the lives of students. It can be argued that at school children spend as much, if not more, of their time processing social information as opposed to technical information. For example, the time-on-task literature has demonstrated that students do not spend all of their time focusing on academic assignments. Even when students are engaged in the technical side of schooling, they must often make social judgments about how to behave. As Mehan (1979) has shown, competent participation in group activities such as recitation requires the ability to interpret contextual information in a way which is consistent with the expectations of the other members of the classroom community. When one considers the social experiences which children have during recess and at lunch, it is clear that students have a number of experiences at school which have nothing to do with the acquisition of technical skills.

Educational researchers interested in studying how schooling influences the social cognition of students must solve a number of problems. In what follows, we will explore the ways in which the structural-developmental perspective can, and <u>cannot</u>, be used to resolve these issues.

<u>Applying the Structural-Developmental Perspective</u>--In order to study socialization, the educational researcher must first answer the following question: What are the social-cognitive outcomes of education? The effects of schooling cannot be understood without some clarity about what is being influenced. Needless to say, there is no simple answer to this question.

The way in which this question is answered depends on the researcher's theoretical perspective. In this section, we consider how Piagetian (i.e., stuctural-developmental) researchers would approach this issue.

To begin with, structural-developmentalists claim that at best, schools influence the rate of social-cognitive development rather than its general course. As noted in our general description of this perspective, Piagetian researchers are interested in the universal, invariant sequence of stages through which all children pass as they develop. Because of variation in the complexity of social experiences which students have available in different educational environments, schooling may influence the rate at which children develop as well as the final level of their social reasoning. However, the sequence of stages or levels through which children pass is always the same (i.e., universal) and not influenced by variation in educational practices.

Besides the rate of social-cognitive development, structural-developmentalists also acknowledge that schools may influence the content of social thinking. That is, educational environments primarily shape what students think rather than how they think. According to this perspective, the structures underlying social thought are constructed by children as they try to make sense of their social experiences rather than being determined by characteristics of the environment.

As previously noted, structural-developmentalists have conceptualized the domain of social cognition in a number of different ways. That is, Piagetian researchers have distinguished a number of different types of social-cognitive development. Unfortunately, it is not clear at this time which distinctions will ultimately prove to be most useful to developmental psychologists or educational researchers interested in social cognition.

Several researchers have analyzed educational settings using Turiel's

(1978a, b) distinction between the moral and societal domains. As previously mentioned, there is evidence indicating that moral and social-conventional events differ along several dimensions (see Nucci and Turiel, 1978; Schweder and Much, 1978). Swarthout (1979) attempted to replicate this finding in a secondary analysis of ethnographic data collected in three fourth grade classrooms. It was found that moral events occurred infrequently in these three classrooms which suggests that it may be difficult to investigate the impact of schooling on moral development using Turiel's definition of morality.

However, the "societal domain" may prove to be a promising area to look for schooling effects. According to Turiel (1978a), this domain refers to "the child's developing concepts of stable systems of interactions between persons, for example, groups, social organizations and social structure" (p. 49). Swarthout (1979) found that over the course of a week, an average of 80 messages about the societal domain were communicated by the three fourth grade teachers who were observed in this study.

This exploratory analysis illustrates one way in which the maps of social cognition proposed by structural-developmentalists such as Turiel, Damon, and Selman can be used to analyze the social events which occur in classrooms. Using these analyses of students' experiences in the classroom, it should be possible to generate and test hypotheses about the effects of schooling on students' social knowledge.

In addition to the potential applications of recent research in the structural-developmental tradition, it is important to note some of the limitations of this work when used to study the outcomes of schooling. Perhaps the biggest problem is the Piagetian concern with cognitive structures as opposed to the content of social thinking. By focusing on general, universal patterns of social thought, these researchers have ignored the aspects of social social

knowledge which are most likely to be influenced by educational variables. For example, Damon's (1977) notion of adult authority is viewed as a broad conception which children construct by reflecting upon their experiences with adults. In actual practice, the structural levels of authority knowledge which Damon distinguishes are designed to describe how children solve any problem which has to do with adult authority. This is a large universe of situations. Damon's assessment of social-cognitive development within this domain is designed to measure how children think about adult authority in general. Although it is possible that the child's experiences with various teachers will influence how s/he thinks about the general issue of adult authority, it seems unlikely that schooling effects on students' authority knowledge would be detected using Damon's measure.

Nevertheless, children learn a great deal about adult authority when they are at school. In order to determine how this sort of social knowledge is acquired, a useful strategy might be to modify the assessment methods devised by Damon. This means using the clinical method to assess social concepts based on school-related experiences. As an example, the EcoTheory project has begun to develop interview techniques for studying student concepts of teacher authority, classroom rules, and distributive justice in the classroom. An initial analysis of the last type of social cognition (conceptions of distributive justice) has been reported by Mergendoller (1980). If sturtural-developmental theory is correct, there should be developmental (age-related) differences in the way children think about these more narrow social-cognitive issues. This sort of research would provide an interesting test of Piagetian theory and would provide information about the social-cognitive outcomes of schooling.

To summarize, it has been argued in this section that students learn a

great deal at school besides technical skills and that little is known about this side of socialization. Structural-developmentalists have begun to chart how children's social cognition develops in general. Although the methods and concepts employed by Piagetian researchers are potentially applicable to the study of classroom and school effects, on student's thinking they will require certain modifications.

Social-Cognitive Processes Mediating Classroom Behavior

In the previous section, we examined how recent work by structural-developmentalists might be used to study the non-technical aspects of socialization. In this section, the discussion focuses on potential applications of recent structural-developmental research to the following issue: How does social cognition mediate the behavior of students in the classroom?

Within the structural-developmental tradition, there is growing interest in the cognition-behavior issue. Several Piagetian researchers have argued that although the study of social cognition is intrinsically valuable, it is also necessary to consider how social-cognitive research can improve our understanding of behavior. For example, Gerson and Damon (1978) claim that most of us are more interested in how people will behave in social-moral situations rather than how they will think. Because of this concern with behavior, most Piagetian researchers believe that moral knowledge is "very much connected with human social behavior. To believe otherwise would be to consider moral reasoning as little more than a cognitive epiphenonmenon accompanying the 'real-life' business of moral action, and this would relegate it to a very uninteresting status indeed" (Gerson and Damon, 1978, pp. 41-42). Similarly, Selman (Cooney and Selman, 1978; Jaquette and Selman, 78; Selman, in press) has emphasized the need to apply structural descriptions of social-cognitive development to the study of social behavior.

In spite of the concern with this issue, little is known about the relationship between social-cognitive structures (levels of social reasoning) and social behavior. Previous research on this problem suggests that the stage-behavior relationship is extremely complex. For example, research based on Kohlberg's description of moral stages has been able to establish few, if any, reliable relationships between individual stages and moral conduct. Similar difficulties have been encountered when researchers have tried to link roletaking to moral behavior. In a recent review of this literature, Kurdek (1977) concluded that the "evidence for viewing children's ability to put themselves in another person's position as a cognitive prerequisite or correlate to...altruistic and cooperative/competitive behavior has not been consistent" (Kurdek, 1977, p. 22).

Because the relationship between behavior and structural variables such as moral reasoning (Kohlberg, 1976) and perspective-taking (Selman, 1976) is not a simple linear one, alternative conceptualizations and hypotheses have been proposed. In two articles (Cooney and Selman, 1978; Kurdek, 1977), it has been recommended that investigators need to search for relationships between more circumscribed variables. Kurdek suggests that perspective-taking and social behavior (e.g., altruism) are multi-dimensional variables and need to be conceptualized in terms of these dimensions. For example, Kurdek claims that cognitive perspective-taking is a complex type of role-taking and consists of a set of component abilities. Instead of asking how perspective-taking is related to social behavior, the more appropriate strategy is to determine how each of the dimensions of cognitive perspective-taking are related to various types of behavior. A similar recommendation has been made by Cooney and Selman (1978).

One of the most provocative and complete attempts to deal with the

cognition-behavior relationship has been proposed by Gerson and Damon (1978). On the one hand, these authors reject the "doctrine of specificity" (Hartshorne and May, 1928-1930), which claims that there is no consistency between judgment and behavior. On the other hand, they object to an "extreme cognitive-structuralist position" (p. 42) according to which behavior is simply a function of cognition. Thus, Gerson and Damon recommend a moderate stance which recognizes the fact that social behavior is often situation-specific and also allows for the influence of structural differences in the maturity of social thinking.

More specifically, the Gerson and Damon approach claims that in order to understand social behavior, the social scientist must take into account three kinds of variables: context, capacity, and objectives. They summarize their position as follows:

> We have drawn the picture of a child during the dynamic process of development, who, using his available developmental capacities, is actively attempting to construct a useful, specific understanding of the particular situation in order to obtain, and possibly reconcile, his or her different moral and nonmoral objectives (p. 51).

Like most social cognitivists, Gerson and Damon emphasize the role of interpretation in mediating the effects of different contexts on social behavior. In addition, they recognize the role of emotions in social behavior. Finally, they distinguish four types of moral/social interactions and discuss how social knowledge mediates behavior in each of these situations.

Although this summary does not capture the complexity of the Gerson-Damon formulation, it does serve to illustrate the fact that many variables must be considered when unraveling cognition-behavior relationships. In an initial study conducted in a particular distributive justice situation (Damon, 1977; Gerson and Damon, 1978) results provided tentative support for the model. However, Gerson and Damon (1978) discuss several limitations of this study which illustrate the difficulties which must be overcome when studying

how social cognition mediates behavior. In order to investigate the claims of their model, Gerson and Damon recommend that data be collected including the following: different social issues, both moral and practical; the developmental level of the child's social reasoning; the child's specific understanding of the situation; and different social contexts. This list of variables highlights the challenges which face educational researchers who wish to study how social cognition mediates behavior in the classroom.

It should be noted that the "interactive model of children's moral understanding and conduct" proposed by Gerson and Damon places minimal emphasis on cognitive structures (stages). Like most structural-developmentalists, they adopt a "constructivist" position which stresses "the long-term power of the individual's self-initiated reasoning and activity in determining" social behavior (Damon, 1978, p. viii). However, their model implies that the child's level of social reasoning is only one, and probably not the most important, of several variables which must be considered when explaining the behavior of children. Consequently, if educational researchers want to investigate the role of social cognition in children's classroom behavior, they should not rely exclusively on structural measures of social-cognitive development.

This is not to say, however, that there is no relationship between performance on structural measures and behavior in the classroom. An intriguing study was recently conducted by Geiger (1978). Using school records, Geiger identified two samples of seventh and eighth graders. One sample consisted of 22 adolescents who had exhibitied disruptive behavior since entering junior high. A second sample of 20 well-behaved subjects also was identified. Each sample was chosen to include an equal number of males and females.

Turiel's (1978a) measure of social-conventional thinking was administered to all subjects. This assessment method is used to categorize individuals in

terms of seven qualitatively distinct modes of thinking about social conventions (i.e., cultural roles and customs). According to Turiel's model, children's conceptions of social conventions develop in terms of a series of "oscillations" between constructing a particular view of social conventions and then rejecting that view in the subsequent stage of development.

Geiger found that disruptive students were more likely to score below the fifth level of social-conventional thinking, which is one of the "affirmative" stages and consists of an awareness that rules serve a regulating function within social systems. In a follow-up investigation, an assessment was made of the social-conventional thinking of the disruptive subjects one year later. The results indicated that adolescents who had reached the fifth level of social-conventional thinking during the second year had become less disruptive than they were during the first year of the study. In contrast, those subjects who did not display this developmental advance continued to be disruptive.

Thus, the results of this study support the hypothesis that there is a relationship between the structures underlying adolescent social-conventional thinking and their behavior vis-a-vis school rules and school authorities. However, Geiger did not find a one-to-one correspondence between social-conventional concepts of social convention and social behavior since there were exceptions to the overall pattern of the results. Although there was a clear-cut relationship between Level 5 thinking and non-disruptive behavior, subjects at Level 4 were not always disruptive. One possible explanation for these exceptions is that students at Level 4 were not disruptive for prudential, practical reasons. For example, they may have wanted to get good grades or to avoid sanctions from school authorities.

It should also be noted that this study did not provide information about the sequential relationship between conceptual changes and behavioral

changes. As Geiger and Turiel (1979) have pointed out, it "is plausible to suppose that behavioral changes can precede (and perhaps influence) the transition to the next level of thinking, just as the transition to the next level may precede behavioral changes without having yet completed the transition to Level 5" (p. 12).

In sum, there is some evidence indicating that performance on structural measures of social-cognitive development may be predictive of behavior at school. However, investigations in other contexts do not reveal consistent relationships between stages of social reasoning and behavior. Although it is plausible to assume that cognitive processes mediate social behavior, the cognition-behavior is extremely complex. As the model of Gerson and Damon (1978) implies, it is unlikely that educational researchers will be able to find simple relationships between social-cognitive structures and classroom behavior since social behavior is mediated by a number of cognitive and non-cognitive processes.

In general, the structural-developmental perspective is likely to be more applicable to the study of the social-cognitive outcomes of schooling than to the explanation of student behavior in the classroom. In order to understand how cognitive processes mediate behavior, the educational researcher needs a more dynamic, micro-oriented conceptualization of social cognition. We turn now to such an approach.

## The Information-Processing Perspective

### Overview

This perspective, like the structural-developmental approach, represents the direct application of a cognitive theory to the topic of social cognition. Social cognitivists within this tradition assume that the methods, concepts,

and assumptions used to examine non-social cognition can be profitably applied to the study of how people deal with social problems. In essence, then, this approach assumes that there is a natural alliance between cognitive psychology and social psychology (Simon, 1976). The processes studied by cognitive psychologists are viewed as essentiallly the same as the phenomena which have traditionally been examined within the "cognitive-social area" of social psychology.

Several themes characterize the information-processing approach to social cognition. As the name suggests, this perspective is concerned with cognitive processes and social information. Cognitive psychologists such as Wyer and Carlston (1979) assume that all social inferences and judgments are based upon the information which is available to the inference maker. Moreover, researchers working within this perspective assume that social inferences and judgments cannot be understood without examining how people process the social information which they have abstracted from their environment.

According to the information-processing perspective, the human mind can be likened to a computer. Certain imput (i.e., information) is fed into the computer (i.e., the mind). Cognitive processes, which can be simulated using computer programs, operate on this input. Simon (1976) claims that the General Problem Solver (Newell and Simon, 1972) can simulate the way people deal with any social problem. Like the computer, the human mind produces output in the form of various social judgments, inferences, expectations, decisions, etc.

Using this approach, psychologists have found that human beings are often not rational and fail to use optimal decision-making rules. This theme has been emphasized recently by Nisbett and Ross (1980). These social cognitivists stress the differences between lay thinking and the way scientists make inferences about the world. More specifically, their position is as follows:

> We contend that people's inferential strategies are well adapted to deal with a wide range of problems, but that these same strategies become a liability when they are applied beyond that range, particularly when they are applied to problems requiring some appreciation of the normative principles that help to guide the professional scientist's more formal inferences (p. xii).

Nisbett and Ross cite evidence from a number of different studies to support this thesis.

Another important theme which has emerged from the information-processing tradition is that social situations are extremely complex and often overwhelm people. Mischel (1979) has used the term "cognitive ecomonics" to describe this theme. According to Mischel, research within the information-processing perspective has led to "the recognition that people are flooded by information which must somehow be reduced and simplified to allow efficient processing and to avoid an otherwise overwhelming overload" (Mischel, 1979, p. 741).

Thus, the complexity of the social world forces people to develop "coding schemes and strategies to reduce complex tasks to manageable proportions" (Carroll and Payne, 1976, p. x). These interpretive devices are often stereotypes constructed from previous experiences. Rather than making the effort to process all of the information that is present in any given situation, people frequently employ "paradigm cases" and "social scenarios" (Abelson, 1976: Schank and Abelson, 1977) when interpreting their social environments. These interpretive devices are often biased and result in inferential errors (Nisbett and Ross, 1980). Moreover, as Langer (1978) has argued, routine social situations are often interpreted in a "mindless" manner. According to Langer, people most frequently engage in flexible, effortful, active, conscious processing of social information when they find themselves in unfamiliar settings.

A number of scholars working within the information-processing perspective

have proposed concepts to describe the interpretive strategies which people use in social situations. Although an exhaustive review will not be attempted, several of these theoretical constructs are described below. The following discussion is based primarily on recent reviews by Wyer and Carlston (1979) and Nisbett and Ross (1980).

Social Scripts--This concept has been introduced by Abelson (1976; Schank and Abelson, 1977) to explain how people "short-circuit" the complete processing of social information. A social script is defined as an expected sequence of events which can be used to predict, evaluate, and generate specific instances. According to Abelson (1970), people's semantic memory contains numerous scripts which can be applied to various social situations.

Recently, Abelson's formulation has been elaborated by Wyer and Carlston (1979). These authors refer to their elaboration as "script-processing theory." According to Wyer and Carlston, script-theory provides a general conceptualization of social cognition rather than a tight theory which can be tested in terms of a set of specific hypotheses. Their aim is to use Abelson's concept to integrate much of the current research and theory which deals with the processing of social information.

Following Abelson, Wyer and Carlston (1979) view scripts as consisting of a series of vignettes. A vignette consists of a nonverbal and/or verbal representation of an event which has been experienced in the past. Each vignette can contain one or more of the following elements: an actor, her/his behavior, an object of this behavior, and its situational context. As Wyer and Carlston point out, "the conception of a vignette is very broad, and is potentially able to incorporate a variety of specific notions about how verbal and nonverbal information are represented in memory" (Wyer and Carlston, 1979, p. 31).

Script-processing theory has a number of advantages. Because of its breadth, it can handle several aspects of social knowledge. According to script-processing theory, scripts and vignettes exist at different levels of abstractness. At the most concrete level, "episodic" vignettes are representations of specific experiences. These experiences can also be grouped into more general categories. At this more abstract level, scripts are composed of "categorical" vignettes which represent the general features of prototypical situations. Thus, in contrast to structural-developmental theory which only looks at very broad concepts, script-theory is able to describe the ways in which people encode and store narrow concepts and bits of social information. In other words, it integrates the content and structure of social knowledge within a general, information processing framework.

Another advantage of script-theory is that it offers an explanation of the role of memory in social cognition. As Wyer and Carlston (1979) note, social situations are interpreted using information stored in memory as well as the encodable information present in the situation.

The script concept is treated somewhat differently by Nisbett and Ross (1980). These authors distinguish two broad, cognitive tools which people use to interpret social reality: knowledge structures and judgmental heuristics. A brief discussion of knowledge structures is presented below while various judgmental heuristics will be discussed in the next section.

According to Nisbett and Ross (1980), knowledge structures are "systems of schematized and abstracted knowledge - beliefs, theories, propositions, and schemas" (p. 7). These various knowledge structures enable people to label and categorize objects and events in a rapid and usually accurate manner. In addition, these sytems of preexisting knowledge serve to define expectations for various events and objects and help people to make appropriate

responses to their social environments.

Although Nisbett and Ross (1980) do not attempt to classify all knowledge structures, they do distinguish two general types: beliefs or theories and more schematic structures. The former refer to "reasonably explicit 'propositions' about the characteristics of objects or objects classes" (p. 28). In contrast, schemas include a variety of less "propositional" structures which serve to organize people's generic knowledge. These latter knowledge structures are "normally not expressed in propositional terms and possibly not stored in a form even analogous to propositional statements" (Nisbett and Ross, 1980, p. 32).

According to Nisbett and Ross (1980), scripts are one subclass of schemas. They differ from most schemas in that they refer to event sequences which extend over time and that the events portrayed in a script are often causally related to each other. Thus, in contrast to Wyer and Carlston (1979), the "script" concept plays a relatively minor role in the overview of social cognition presented by Nisbett and Ross (1980).

Judgmental Heuristics--As noted earlier, judgmental heuristics refer to the second broad type of cognitive tools discussed by Nisbett and Ross (1980). In their discussion of these cognitive strategies used by the layperson to "reduce complex inferential tasks to simple judgmental operations" (p. 7), Nisbett and Ross borrow heavily from the work of Tversky and Kahneman (Kahneman and Tversky, 1971, 1973, in press; Tversky and Kahneman, 1971, 1973, 1974, 1978).

Kahneman and Tversky have focused on two heuristics: the representative heuristic and the availability heuristic. The former allows people to reduce complex tasks into fairly simple similarity judgments. The primary features of an object are used to assign it to a conceptual category and judgments are

based on that categorization. This heuristic is used when people make predictions on the basis of stereotypes.

The availability heuristic is used when people make judgments of frequency, probablity, and causality on the basis of the objects or events that are readily "available" in memory. Nisbett and Ross (1980) describe numerous experimental studies which show that the criterion of availability in memory or consciousness often leads to judgments which are inaccurate.

In addition to these two judgmental heuristics studied by Tversky and Kahneman, Nisbett and Ross discuss a third intuitive heuristic which they refer to as the weighting strategy. According to this strategy, inferential weight is assigned to physical and social data in accordance with the salience and vividness of the data. Nisbett and Ross argue that information "is heeded, processed, stored, and retrieved in proportion to its sensory, cognitive, and affective salience" (p. 8). In other words, less vivid information tends to be ignored while salient information is more likely to be processed when inferences are made.

Having provided an overview of the information-processing perspective, we turn to a discussion of the following question: How can this approach be used by educational researchers? As with the structural-developmental perspective, two possible applications are considered.

## Social-Cognitive Processes Which Mediate Behavior in the Classroom

In general, cognitive psychologists have had little to say about the role of cognitive processes in social behavior. Like the structural-developmental perspective, the information-processing approach has developed as a way to think about cognitive phenomena. Workers within this tradition have focused on what and how people think rather than what they do. Indeed, Nisbett and Ross (1980) have stated that little is known "about precisely how people's

judgments affect their behavior... We share our field's inability to bridge the gap between cognition and behavior, a gap that in our opinion is the most serious failing of modern cognitive psychology" (p. 11).

In spite of cognitive psychologists' relative silence on this issue, it does seem clear that social-cognitive processes do play a role in behavior. For example, Nisbett and Ross (1980) review a number of studies which show that people's judgmental errors are often reflected in their behavior. They conclude that inferential errors can be seen in people's judgments and behavior both inside and outside the laboratory.

It is also worth noting that in contrast to structural-developmentalists, only a few researchers within the information-processing perspective have studied the development of inferential strategies in school-aged children (see Shatz, 1977). Most of the studies within this tradition have examined the cognitive processes of college students in the laboratory. Unlike structural-developmental research, the knowledge generated by the information-processing approach is most easily applied to the study of teachers rather than the social-cognitive activities of students. Investigations of teachers' information-processing strategies are discussed in the following section.

Studies of Teacher Thinking--Within the field of research on teaching, a few authors have discerned a slow shift from a concern with what teachers do and how this influences students to an interest in the thinking, planning, and intentions of teachers (Clark and Yinger, 1979; Powell, 1979). In other words, it is claimed that process-product studies are decreasing in popularity as more and more researchers examine the thinking of teachers as a way to better understand why teachers do what they do. This emphasis on the social cognition of teachers is based on the assumption "that what teachers do is affected by what they think... The study of the thinking processes of teachers -

how they gather, organize, interpret, and evaluate information - is expected to lead to understandings of the uniquely human processes that guide and determine their behavior" (Clark and Yinger, 1979, p. 231).

Clark (1979) has used the term "cognitive information-processing approach" to refer to this new concern with teacher thinking and distinguishes it from other approaches to the study of teaching. Since this literature has recently been reviewed elsewhere (Clark and Yinger, 1979), we will not focus on the substantive findings which have emerged within the cognitive information-processing approach to teaching. Rather, a comparison will be made between these studies on teacher thinking and the basic research on information-processing which was briefly reviewed in the previous section. Several similarities and differences will be noted.

First, consider the theme that social environments are exceedingly complex and, therefore, the processing of social information is inevitably incomplete. This theme was evident in our earlier description of the information-processing approach to social cognition. It can also be found in the literature on teacher thinking. For example, Joyce (1978-1979) has described the classroom as a particularly complex stimulus field. "With so much happening all the time, there simply has to be some kind of selectivity" with respect to the stimuli which get perceived and interpreted (p. 70).

A second similarity between basic research within the information-processing tradition and the literature on teacher thinking is the recognition that people use various cognitive strategies to reduce the complexity of information-processing demands placed upon them by their social environments. Using the language of cognitive psychology, Clark (1979) describes the social cognition of teachers in the following way: "The teacher enters a complex task environment and simplifies it by defining some small part of it as the problem

space within which he or she will work" (p. 6). In addition, Clark and Yinger (1979) have reviewed recent research which has examined the implicit theories of teachers. The study of these "knowledge structures" (Nisbett and Ross, 1980) or scripts (Abelson, 1976; Wyer and Carlston, 1979) is based on "the belief that the thinking and behavior of teachers are guided by a set of organized beliefs, often operating unconsciously" (Clark and Yinger, 1979, p. 259).

In a similar fashion, Joyce (1978-1979) has begun to formulate a theory of information processing in teaching. He conceptualizes teacher thinking in terms of a series of four overlapping dimensions: the flow of potential stimuli, the perception of cues, the interpretation of stimuli, and the responses (teacher behaviors) which occur as a result of the foregoing processing of social information. In addition, he explains the selective attention of teachers in terms of their "attention-focusing structures" and describes three types of cognitive routines: immediate action routines, delayed action routines, and comprehension routines. Each of these information-processing systems are used to interpret social information which has been identified as "relevant" according to a variety of criteria which vary from teacher to teacher. Joyce points out that in some situations, "no routine is available. It is in these cases that the teachers must make a conscious decision about what to do" (p. 72).

It is worth noting that these two themes can be applied to a social-cognitive phenomenon which has received a great deal of attention from educational researchers: teacher expectations for student performance. According to Good (in press), the quick formation of teacher expectations is highly likely because of the complexity and rapid pace of classroom life. In other words, scripts for each student are created by teachers in order to reduce information-processing demands. Once these scripts are formed, they influence the interpretation of

neutral stimuli. As Good (in press) points out, signs of failure are more likely to be found if teachers are looking for them than if they are looking for evidence of success. According to Good's explanation, student behavior is frequently ambiguous and does not have any independent meaning until the teacher interprets it in terms of her/his expectations for that sutdent. Although this account of teacher expectations resembles a script-processing formulation, Good does not cite any work from the literature on social cognition.

A failure to borrow from the information-processing literature is also characteristic of the "new wave" of research on teacher thinking. This is surprising when one considers the fact that researchers such as Clark (Clark, 1979; Clark and Yinger, 1979) and Joyce (1978-1979) use the term information-processing so frequently in their writing. Although basic researchers working within the information-processing tradition and educational researchers concerned with teacher thinking are interested in the same sorts of phenomena, the two lines of research appear to be developing in relative independence of each other.

This relative lack of cross-fertilization may account for some of the differences which exist between the two bodies of knowledge. Three of these differences are discussed below.

First, researchers interested in teacher thinking seem to have a great deal of confidence in the self-reports of teachers. As Clark and Yinger (1979) have pointed out, most of the information-processing studies of teaching have depended upon teacher' self-reports of their thought processes. This mode of data collection seems to be viewed as both necessary and desirable. For example, Powell (1979) notes that in studying the social cognition teachers, the "researcher will need to trust the information provided by the teacher as the primary source of data for the research, data not easily verifiable by an

'impartial observer'" (p. 7). She seems to view this as a virtue of this type of research on teaching. Similarly, Joyce (1978-1979) has argued that although it is often impossible for an observer to discern the stages of teachers' information-processing, teachers "have proved to be generous informants about what they see and how they interpret it--they help to fill in the gaps" (p. 69).

In contrast, basic researchers within the information-processing tradition have often been distrustful of self-report data. These social cognitivists claim that a great deal of social information gets processed outside of conscious awareness. As noted earlier, Langer (1978) has persuasively argued that when people are participating in familiar, routine social situations, their behavior is essentially "mindless." That is, they engage in a minimum of conscious, social-cognitive activity. Their behavior, in other words, is habitual and regulated by the scripts which they have constructed on the basis of previous experiences in similar situations. According to Langer, conscious processing of social information is most likely to occur in new contexts (e.g., at the beginning of the school year).

In a similar vein, Nisbett and Wilson (1977) have reviewed a number of studies which indicate that the social-cognitive processes which mediate behavior usually take place without the individual being aware of them. As they put it, the "overall results...confound any assumptions that conscious, verbal cognitive processes result in conscious, verbalizable changes in evaluations or motive states which then mediate changed behavior" (p. 235). Although this counter-intuitive position has been challenged on a number of different grounds (Smith and Miller, 1978; Rich, 1979; White, 1980), there does seem to be general agreement that under certain circumstances, people are not aware of how cognitive processes mediate their social behavior.

Both of these articles imply that there may be problems with using an

interview methodology to access the social-cognitive activities of teachers and students in routine classroom situations. To the extent that teachers use scripts to process classroom information, they will be unable to report on their cognitive processes since this type of information-processing occurs outside of consciousness. There seems to be little sensitivity to this issue within the research literature on teacher thinking.

A second difference between the basic research of psychologists within the information-processing perspective and studies of teacher thinking is that the latter tends to emphasize the social side of social cognition. The theme that teacher thinking is heavily influenced by contextual factors is emphasized in the writings of Clark (1979), Powell (1979), and Joyce (1978-1979). This emphasis on setting variables is consistent with recent research on the social organization of the classroom (e.g., Bossert, 1978a, b; 1979). In contrast, cognitive psychologists have paid little attention to the settings in which people process social information.

The two information-processing literatures also differ in the extent to which they view people as rational interpreters of social information. Researchers interested in teacher thinking tend to interpret the social cognition of teachers as rational and adaptive. This characteristic of the information-processing approach to teaching research has been explicitly noted by Clark (1979). In contrast, as discussed previously, the basic research on social cognition reviewed by Nisbett and Ross (1980) highlights the errors and biases of people when they draw inferences about their social world.

Although other differences could be noted, these three reflect some of the discrepancies which exist between the two approaches to research on information-processing. To some extent, these differences may reflect the greater willingness of educational researchers to study social cognition in

the naturalistic setting of the classroom. The thinking of teachers may be unique and not generalizable to the information-processing of other kinds of people in situations other than the classroom (e.g., the laboratory).

Before turning to the application of the information-processing perspective to the study of student outcomes, one final point needs to be made. Although the information-processing approach to research on teaching assumes that teacher behavior cannot be understood without looking at the social-cognitive activities of the teacher, conceptualizations of the mediating links between cognition and behavior have not been formulated in a clear-cut, testable fashion. As Joyce (1978-1979) has noted, these links are rarely evident when teachers are observed. Moreover, there are probably a number of diverse relationships between social cognition and behavior. Joyce's research (1978-1979) indicates that the "action resulting from processing information...may be covert or overt" and "the activity may be immediate or delayed" (p. 69). The problems which cognitive psychologists have encountered in studying cognition-behavior relationships (see Nisbett and Ross, 1980) suggests that it will be difficult for educational researchers to conceptualize and demonstrate empirically the ways in which the behavior of teachers is mediated by their processing of social information.

## Social-Cognitive Outcomes of Schooling

The information-processing perspective has paid little attention to the cognitive outcomes of participation in various social settings. There are at least two reasons for this. First, cognitive psychologists are primarily concerned in the cognitive processes which people use to interpret social situations. They have focused on the dynamic aspects of social cognition rather than its stable, enduring features. Second, the knowledge based on this perspective comes from laboratory studies of adult subjects rather than

comparisons of the "information-handling techniques" (Shatz, 1977) employed by children. Social-cognitive outcomes are primarily of interest to developmental psychologists and educators who want to understand socialization.

Nevertheless, the work of information-processing psychologists is not completely irrelevant to the issues of non-technical socialization. In particular, the concepts of "knowledge structures" (Nesbitt and Ross, 1980) and scripts provide the educational researcher with analytic tools for thinking about the social-cognitive outcomes of schooling. Like Piagetian analyses of social-cognitive structures, these constructs refer to the organization of social knowledge. There is no doubt that students' knowledge structures (concepts, scripts, schemas, etc.) deserve the attention of educational researchers. According to Nisbett and Ross (1980),

> The "notion that the layperson's experience, understanding, and inferences are structured by a great and varied store of schemas is intuitively satisfying. Indeed, it has become increasingly clear to theorists working in almost all areas of psychology that the schema construct is a cornerstone of psychological theory" (p. 36).

Unfortunately, the author is not aware of any attempts to use these theoretical constructs from the information-processing literature to analyze the non-technical products of students' educational experiences. It seems likely that students' knowledge of classrooms and schools could easily be analyzed using the concepts of knowledge structures and/or scripts. Hopefully, educational researchers will attempt such analyses in the near future.

To summarize this section on the information-processing perspective, it should be clear that a great deal is known about the cognitive processes of adult subjects in experimental studies. Although the information-processing literature contains a number of interesting themes, it is not clear if this knowledge can be directly applied to the study of classroom life. Teacher thinking is one area in which the information-processing perspective should

be readily applicable. Although educational researchers have begun to study how teachers process classroom information, this research is relatively uninformed by recent investigations conducted by basic researchers working within the information-processing perspective. In addition studies of teacher thinking will be of limited value until more sophisticated conceptualizations of the relationship between teacher thinking and behavior can be tested.

It is also possible that the information-processing perspective will be applied to student thinking. However, this sort of application will be difficult until more is known about the processes which children use to process information. It may prove easier to use the information-processing approach to study the knowledge structures and/or scripts which children construct from their social experiences at school.

Thus far, we have examined two "cognitive" approaches to social cognition. The next two perspectives to be discussed are essentially "social" in that they were developed by basic researchers interested in explaining social behavior. Attribution theory is considered first and then the ethnomethodological perspective is examined.

## Attribution Theory

### Overview

There are a number of social-cognitive approaches within the field of social psychology: attribution theory, equity theory, social comparison theory, self-perception theory, and dissonance theory. These theories assume that social behavior is mediated by cognitive processes. In this section, we will focus on attribution theory as representative of the "cognitive area" of social psychology. Attribution theory was selected because of its current popularity among social psychologists. According to DeSoto (1979), it is the

"hottest topic in social psychology today" (p. 455). In addition, there seem to be a number of ways in which attribution theory can be used to increase our understanding of classrooms.

Attribution theorists are primarily concerned with the causal inferences made by people to explain human behavior. That is, they study how people assign causality for various social events. The process of interpreting the world in cause-and-effect terms is viewed as one of the primary ways in which people make sense of their world (Langer, 1978). The perceived causes of behavior are referred to as attributions.

More generally, attribution theorists assume that people are constantly searching for knowledge and an understanding of their social worlds. According to attribution theory, "information seeking and veridical processing...may be manifested in spite of a conflicting pleasure principle, and, at the least, comprehension stands with hedonism among the primary sources of motivation" (Weiner, 1979, p. 3). Put somewhat differently, people repeatedly ask themselves "what" and "why" questions and their answers lead to different kinds of social behavior.

One of the reasons for the popularity of the attributional approach is that it has provided useful insights into a number of social psychological phenomena. According to Harvey, Ickes, and Kidd (1978), "Attributions play a major role in the interrelated processes of socialization, social perception, and social influence" (p. 154). For example, Dienstbeier (1978) and Grusec (1978) have both shown how attribution theory can be used to explain the internalization of moral standards. Similarly, it has also proved useful in the study of motivation (Weiner, 1979).

The utility of attributional analyses is illustrated in several recent literature reviews. For example, recent reviewers of the learned helplessness

literature have agreed on the necessity of analyzing this phenomenon from the perspective of attribution theory (Abramson, Seligman, Martin, and Teasdale, 1978; Clifford, 1979; Miller and Norman, 1979). According to Clifford (1979), there is "impressive" evidence indicating that people's behavior in failure situations cannot be understood without considering attributions in particular and cognitions in general. A second example comes from research on teaching. Brophy (1979) has recently reviewed studies of teacher praise and concluded that attribution theory provides a useful framework for analyzing how student interpretations mediate the effects of praise statements.

To some extent, the popularity of attribution theory reflects the general shift from S-R approaches in psychology to cognitive theories. As Mischel (1979) has pointed out, during the last ten years psychologists "have increasingly recognized that an adequate analysis of behavior cannot proceed without serious attention to the cognitive processes" of the participants in social situations (p. 752).

The general strategy used to discuss the structural-developmental and information-processing approaches will also be employed in this section. We begin by examining how attributional processes mediate behavior in the classroom. This is followed by an attributional analysis of the outcomes of schooling.

## Attributional Processes Mediating Classroom Behavior

Like the structural-developmental and information-processing approaches, attributional theorists have attempted to describe people's social-cognitive activities. As Harvey, Ickes, and Kidd (1978) have noted, early attribution theorists such as Heider, Jones, and Kelley were primarily interested in the fundamental processes people use to make causal inferences. However, unlike the structural-developmental and information-processing perspectives,

attribution theorists have examined the behavioral implications of social-cognitive processes. According to Harvey, Ickes, and Kidd (1978), most of the recent research conducted by attribution theorists has focused on the ways in which attributions mediate behavior.

In this section, attributional analyses of academic motivation will be discussed. This topic was selected because it illustrates how attribution theory has been used to reconceptualize important phenomena and because educational researchers are likely to be interested in achievement motivation.

We begin with a discussion of Weiner's theory of achievement motivation. After discussing Weiner's work, other approaches to academic motivation will be considered.

Weiner's Theory of Motivation--Weiner (1972, 1974, 1979) has formulated an attributional analysis of achievement motivation which emphasizes people's interpretations of the causes of their own successes and failures. According to Weiner's approach to classroom motivation and experience, students frequently ask themselves "the attributional question of, 'Why did I succeed or fail?'" (Weiner, 1979, p. 3). This question usually takes a more situation-specific form (e.g., "Why did I get an 'A'?" or "Why did I do better on this assignment than John?")

Although the perceived causes of success and failure are extremely varied, Weiner and his colleagues believe they have constructed a taxonomy which can be used to classify achievement attributions. According to Weiner, the perceived causes of achievement outcomes can be categorized in terms of the following three dimensions: locus (internal versus external causes), stability, and controllability. Weiner (1979) postulates "that each of the three dimensions of causality has a primary psychological function or linkage, as well as a number of secondary effects" (p. 8). For example, the dimensions of stability

are primarily related to the magnitude of expectancy changes following failure or success. If an achievement outcome is attributed to a cause such as luck, expectations for future performance in similar situations are unlikely to be altered by the outcome. In contrast, stable causes are likely to operate in the future and, therefore, it is reasonable to adjust expectations by taking into account recent performance.

A growing body of evidence supports Weiner's analysis of achievement motivation. A number of relationships have been found between causal attributions and the level of motivation displayed in other situations. Consider, for example, the two most common explanations for success and failure: ability and effort. These two causal attributions have different effects on people's achievement orientation and behavior. If a person attributes failure to a lack of ability, he/she will exhibit less motivation in the future because performance is seen to be due to a stable and uncontrollable cause. In such a situation the individual tends to "give up" because there is no reason to believe that failure will be avoided in the future. In contrast, when failure is explained in terms of a lack of effort, subsequent motivation is heightened. In essence, the implicit reasoning used by the individual is, "I can do better if only I try harder."

As Bar-tal (1978) has argued, the achievement attribution model has a great deal of potential for explaining how students perform on various learning tasks. For example, Dweck and Goetz (1978) have concluded that achievement cognitions are often better predictors of response to failure than variables such as level of ability or one's history of success. More specifically, it may be useful for explaining underachievement. That is, the attribution model is especially applicable in cases where students fail to use their academic abilities. Bar-tal (1978) argues that students who attribute failure to a

lack of ability are using self-defeating, "maladaptive causal perceptions" (p. 268).

Nevertheless, there are a number of issues which must be resolved before the potential utility of Weiner's model is actualized. First, the empirical support for the theory is based almost exclusively on the behavior of college students in laboratory situations. Needless to say, there are numerous differences between the laboratory and the classroom. Similarly, undergraduates do not always behave like elementary and secondary school students. For example, Clifford (1979) has noted that the primary occupation of college students is to study cause-effect relationships. Attribution theories such as Weiner's may not be able to account for the behavior of people who are less interested in identifying the causes of their behavior.

Second, as Weiner (1979) has acknowledged, attribution theorists have not provided a clear statement of when people make causal inferences. This issue has been raised by Langer (1978) who questions the pervasiveness of the attribution phenomenon. According to Langer, "We know that people are capable of perceiving their world in cause-and-effect terms, but how often and under what circumstances do they actually do this?" (p. 35).

This problem was quite evident when the EcoTheory project attempted initially to apply Weiner's model as part of the exploratory study referred to at the beginning of this paper. In several situations, it seemed highly unlikely that students would ever attempt an attributional analysis of their behavior. For example, during a whole class discussion, students are unlikely to view their performance as either a success or failure and hence, there would be no reason to ask Weiner's attribution question. In general, it appears that students are most likely to make achievement attributions when they are presented with an academic outcome which is clearly either a success

or failure.

As previously noted, Langer has argued that people rarely engage in thoughtful, conscious processing of social information. Her position raises the important question: "Are people aware of the achievement attributions they make?" Weiner (1979) has speculated "that attributional inferences often are quite retrospective, summarize a number of experiences, take place below a level of immediate awareness, and are intimately tied with self-esteem and self-concept" (p. 4). According to Weiner, achievement attributions are not always supplied during or immediately following the completion of a task.

If Weiner is correct, a host of conceptual and methodological questions arise. If causal inferences are made outside of "immediate awareness," how do we find out when they have occurred? As Nicholls (1979) has suggested, it is easy to find out how students answer researcher's questions but it is harder to determine when students ask and answer their <u>own</u> questions. If there are a number of academic situations in which students do not attempt to explain their performance, then what sorts of achievement behaviors are mediated by causal inferences? If attributions are tied to self-concept, in what ways do they mediate performance in achievement situations? Do attributions mediate achievement outcomes in a predictive (correlational) fashion or do they actually cause certain types of behavior in the classroom?

A final issue has been raised by Nicholls (1979) who argues that Weiner has focused on only one of several attributional questions which can be asked by students. As previously noted, Weiner is primarily concerned with how people implicitly or explicitly answer questions such as the following: "Why did I fail?" "Why did I succeed?" According to Nicholls, Weiner's perspective is most usefully applied to competitive situations in which people can compare their performance with the performance of others. In the classroom this

inevitably leads to the following question: "How bright am I?" For students who conclude that their failure is due to a lack of ability, the consequences for academic motivation are disastrous since low performance is attributed to a stable, uncontrollable cause. In sum, Nicholls (1979) argues that both the assumptions of Weiner's approach as well as the available evidence suggest "that ability attributions may be the most important determinants of achievement affect (as well as expectancies) and, therefore, of achievement behavior" (p. 1073). Consequently, Weiner's analysis implies that differences in achievement motivation are inevitable to the extent "that students make accurate assessments of their attainment relative to that of others and reason in an essentially logical fashion about the causes of their successes and failures" (p. 1074).

Nicholls claims that this pessimistic conclusion can be avoided if the attributional analysis does not focus on the perceived causes of success and failure in competitive settings. He proposes alternative motivational perspectives. These approaches focus on other questions which can be asked by students in the classroom.

Other Approaches to Motivation--Rather than attempting to analyze the causes of success and failure, people can ask themselves other questions about their behavior such as the following: Why am I doing or not doing this? This question identifies a second perspective on achievement motivation which focuses on how people explain their own behavior. In contrast to Weiner's perspective which considers the perceived causes of outcomes of achievement outcomes, this approach to motivation emphasizes people's reasons or justifications for their behavior (Buss, 1978; Kruglanski, 1975).

When analyzing the perceived reasons for behavior, it is crucial to distinguish between the means and ends of behavior. Accordingly, Nicholls

emphasizes Kruglanski's (1975) distribution between exogeneous attributions-which explain behavior in terms of its expected consequences-and endogeneous attributions-in which behavior or activity is seen as an end in itself. Nicholls argues that when working on academic tasks, students should be encouraged to make endogeneous attributions and suggests several strategies which might be used to accomplish this aim.

The third motivational perspective identified by Nicholls is referred to as task involvement. This approach focuses on answers to the following kinds of questions: "How can I solve this?" "How can I understand this?" Nicholls' conception of task-oriented motivation assumes that children are intrinsically motivated to demonstrate their competence and that the task of the teacher is to find activities which maximize an endogeneous task-orientation in students.

Nicholls recognizes that both of these motivational perspectives are underdeveloped and "may be difficult to test fully without something approaching a revolution in the world view of researchers and teachers" (p. 1082). Nevertheless, he maintains that these alternative perspectives, unlike Weiner's approach, suggest ways of minimizing unequal motivation among students.

## Social-Cognitive Outcomes of Schooling

In the preceding section, several important social-cognitive outcomes were discussed. Social-cognitive variables such as ability attributions, effort attributions, learned helplessness, and endogeneous attributions were examined as explanations of academic motivation. In each case, it was assumed that these social cognitions mediate behavior and affect in the classroom. To the extent that these mediating cognitions become stable schemas or scripts which get integrated into the self-concept of students (Weiner, 1979), they are educational outcomes which need to be considered by educators. As Nicholls (1979) has argued, maximizing academic motivation is an appropriate goal for

education.

Unfortunately, little is known about the ways in which student motivation is influenced by classroom variables (Good, in press). Nevertheless, there are a few studies which have examined this issue from the perspective of attribution theory. This research is briefly reviewed below.

A few attributional studies have looked at teacher feedback and its effects on motivation. One of the most interesting of these studies has been reported by Dweck, Davidson, Nelson, and Enna (1978). On the basis of previous research, they concluded that girls, when compared to boys, tend to perceive themselves as lacking in academic ability even though they receive more positive feedback from their teachers. Dweck et al. (1978) tried to explain sex differences in learned helplessness by looking at patterns of teacher feedback. They found several interesting sex differences in the ways teachers typically praise and criticize girls as opposed to boys. For example, in contrast to boys, praise to girls was less likely to be based on the correctness of their work and more likely to focus on the form of their performance (e.g., neatness, speaking clearly, following directions). In the case of negative evaluations, the pattern was reversed. Boys were less likely to be criticized for incorrect answers while girls received more negative evaluations regarding the quality of their academic performance.

Dweck et al. (1978) speculate on how this differential teacher behavior influences perceptions of academic ability. Because girls received more negative feedback focusing on the intellectual aspects of their work, they should be more likely to interpret these criticisms as communicating information about their academic ability. It is likely that the feedback to boys would be interpreted differently. Boys would find it easier to discount academic criticism because this feedback is directed at the form of their

behavior rather than its correctness. In contrast, boys would find teacher praise to be more credible. Because they tend to be praised for performance which is objectively successful, boys are likely to pay more attention to teacher praise and be reinforced by it. In contrast, girls would be less likely to be encouraged and/or reinforced by teacher praise which dealt with matters of form rather than content.

It should be noted that the results of this study have often been accepted uncritically. For example, Shaver (1979) has stated that this research "should be required reading for teachers, elementary education students, and parents" (p. 681). Similarly, Brophy (1979) has not questioned the conclusions of this study.

Two recent investigations suggest that more caution is in order. First, Cooper, Burger, and Good (1979) have questioned the assumption that there are sex differences in learned helplessness. A meta-analysis of previous studies using the Intellectual Achievement Responsibility Scale (Crandall, et al., 1965) revealed that girls tend to assume more responsibility for academic outcomes than males. A readministration of the measure provided additional support for this conclusion. This research suggests, then, that Dweck et al. (1978) were premature, if not wrong, when they concluded that "girls are more likely than boys to exhibit the helplessness pattern of attributions" (p. 268).

Second, it should be noted that Dweck et al. (1978) observed only two teachers and the feedback pattern which they observed may not be typical of other teachers. A recent study suggests that this is the case. In the secondary analysis of ethnographic data from three fourth grade classrooms referred to earlier in this paper (Swarthout, 1979), an attempt was made to replicate the findings reported by Dweck et al. (1978)

In this analysis of academic feedback during the third week of school,

Swarthout found only ambiguous support for the hypothesis that there are sex differences in the type of academic feedback given to students. In one of the classrooms, boys received more form-related criticisms than girls. However, when the other two teachers criticized the nonintellectual aspects of performance, they directed their comments to the class as a whole. In addition, there do seem to be sex differences in the amount of feedback which students receive. In comparison to girls, boys received more academic praise and criticism. Thus, these two studies indicate that the empirical support for the analysis proposed by Dweck et al. (1978) is inconclusive.

Other research suggests that in some cases, differential teacher feedback may be responsible for teacher expectations effects (see Good, in press). More specifically, it has been found that certain teachers provide feedback to low-expectation students which is less contingent on student effort than the feedback given to students who are expected to perform well. Cooper's (1978) research suggests the intriguing possiblity that because of the feedback they receive from teachers, low-expectation students come to believe that there is little relationship between their effort and academic outcomes. Because of this belief, they may put forth less effort and fall farther behind their classmates who receive more effort-contingent feedback.

As previously noted, Nicholls (1979) has discussed various teaching strategies which may increase the frequency of endogeneous, task-oriented attributions. For example, he argues that endogeneous attributions are more likely to be made in noncompetitive situations which shift attention away from social comparison processes. In classroom contexts which do not stress normative evaluation of performance, students are less likely to attribute academic outcomes to ability. A study reported by Ames, Ames, and Felker (1977) supports this argument. Nicholls (1979) also recommends that teachers

ask students to evaluate and schedule their work whenever possible and to provide "children with ethically justifiable rationales for learning that will make it inherently meaningful for most if not all of them" (p. 1077).

By way of summary, it should be evident that in contrast to the structural-developmental and information-processing perspectives, there have been a few attempts to use attribution theory to study the effects of classroom variables, especially teacher feedback, on student motivation. Unfortunately, this type of research is relatively new and as a result, it is premature to draw any definite conclusions. Nevertheless, it appears that attribution theory provides a promising, new perspective for analyzing how classroom processes influence the motivation of students.

## Ethnomethodology/Cognitive Sociology

### Overview

Like the other three approaches to social cognition which have already been discussed, there are noteworthy differences between the position of various scholars within the perspective of ethnomethodology. Recently, O'Keefe (1979) has argued that in many ways, Garfinkel's (1967) version of ethnomethodology is inconsistent with Cicourel's (1973) orientation. Since Cicourel focuses on social cognition in his writings, his work will be emphasized in the following discussion of ethnomethodology.

In contrast to the three psychological approaches discussed earlier in this paper, ethnomethodology is a sociological perspective. Like other sociological approaches, ethnomethodologists are concerned with the organization of social interactions. They assume that a careful analysis of ongoing, natural interactions will reveal the stuctures underlying human relationships. Rather than examining social structure at a macro level, ethnomethodologists

analyze the "micro" aspects of social structure. According to Cicourel (1978), when people interact they "create normative displays that simultaneously reveal key aspects of social structure" (p. 258). Unlike most sociologists, ethnomethologists search for invariant processes via exhaustive analysis of actual interactions between people.

As O'Keefe (1979) has pointed out, Cicourel's work can be viewed as a version of the general viewpoint that social interaction is rule-generated. According to this interpretation, Cicourel emphasizes the rules which regulate human relations. Ethnomethodologists claim that the rules which serve to structure social interactions are essentially tacit. That is, the participants in any social interaction are rarely able to provide verbal formulations of the implicit rules which guide their behavior.

In contrast to most sociologists (including Garfinkel), Cicourel assumes that social structure cannot be understood without considering cognitive processes. The basic theme of his approach to social cognition is expressed in the following quote:

> (an adequate theory of socialization must be able to) specify the child's use of executive activities or use of interpretive and summarization procedures while experiencing, producing, or contributing to social interaction. An executive or interpretive process that selects and summarizes immediate and stored experiences presumes an important cognitive process and socio-cultural awareness not clearly specified in studies of child development. (1978, p. 276).

Two features of social settings point to the importance of the interpretive procedures which people use when interacting. First, the behavior of others is often ambiguous. According to ethnomethodoligists, successful interactions are unlikely unless the participants share a common understanding of the situation. Shared interpretations of social reality are acquired via socialization. Second, ethnomethodologists emphasize the context-specific

nature of social behavior. In order to engage in successful social interactions, people must continually interpret and adapt to specific, contextual cues.

These, then, are the basic themes of Cicourel's version of ethnomethodology. These themes will be elaborated in the following two sections which examine social-cognitive outcomes and processes from the perspective of ethnomethodology.

Social-Cognitive Processes Which Mediate Social Behavior

Ethnomethodologists, especially Cicourel, take a rather strong position on the issue of the relationship between social cognition and behavior. As Berndt (1979) has noted, ethnomethodologists avoid "the artificial separation of social cognition from social behavior" (p. 70). According to Mehan (1979), cognition and behavior "are in a constant dialectical relationship". (p. 29); one cannot exist without the other. People are constantly interpreting social information from their environments and this leads to behavior which produces new cues to be processed and so on.

As previously noted, Cicourel emphasizes the cognitive aspects of social interactions. According to Cicourel, social behavior cannot be understood without considering the "interpretive abilities" (Cicourel, 1974) or "interpretive procedures" (Cicourel, 1978) which people employ to make sense of their social world. These interpretive procedures have been described elsewhere (see Cicourel, 1974, pp. 302-306; and O'Keefe, 1979, pp. 191-193) and will not be reviewed here.

However, it should be noted that Cicourel (1972) distinguishes norms or "surface rules" from interpretive procedures. Surface rules (norms) are not basic to the inferences which people make about taking or making roles. In contrast, the "basic rules of interpretive procedures are like deep structure

grammatical rules; they enable the actor to generate appropriate (usually innovative) responses in changing situated settings" (Cicourel, 1972, p. 244). This distinction illustrates how Cicourel's thinking has been influenced by Chomsky. Another example of Chomsky's influence is Cicourel's concept of interactional competence which will be discussed in the next section.

Cicourel's work has also been influenced by scholars outside of the ethnomethodological tradition. One influence has been the social phenomenology of Schutz (1967). A second influence has been research within the information-processing perspective. For example, Cicourel has written that "an understanding of basic theoretical issues and experimental results in attention and memory is helpful for recognizing the central role...(of) the interactional context within which experiments, tests, classroom instruction, and evaluation take place" (Cicourel, 1974, p. 312).

The process of attention is important because there are numerous modalities of information which can be attended to in any social exchange. According to Cicourel (1974), the inevitable selective attention exhibited by actors in social situations is organized by normative and cultural constraints. The process of memory is viewed as important because Cicourel assumes that people must repeatedly apply their stored information to the particular interactional context in which they are acting.

Although Cicourel and other ethnomethodologists have constructed a plausible, interesting account of how cognitive processes mediate social behavior, there have been few empirical attempts to validate these ideas (either outside or inside the classroom). The main block to convincing research seems to be the problems which arise when one tries to draw inferences about social cognition from observed behavior. This is the strategy which ethnomethodologists

have chosen to use when studying social cognition. As Cicourel (1978) and others (Berndt, 1979) have noted, interpretations in terms of cognitive processes are hard to make on the basis of observed behavior alone.

Before turning to an examination of social-cognitive outcomes from the perspective of ethnomethodology, mention should be made of a few educational studies which have been conducted by ethnomethodologists. First, several investigations have been reported by Cicourel and his colleagues (Cicourel et al., 1974). Some of the themes which run through these studies are the following: 1) adults frequently overestimate children's knowledge of what is "obvious" to adult members of the culture; 2) classrooms are extremely complex settings which place demands on children to perceive and integrate multiple sources of social information; and 3) teachers frequently underestimate students' ability to process teacher messages and other aspects of classroom life.

Second, Mehan (1979) has conducted an ethnomethodological analysis of several lessons taught in a single first grade classroom. Many of his conclusions will sound familiar to the reader. Like other ethnomethodologists, Mehan (1979) found that the rules which regulate social interactions during lessons are tacit. Because "classroom procedures, like other normative rules, ....are seldom formulated by the teacher at the beginning of the school year or school day" (p. 161), students are forced to "engage in active interpretive work" (p. 170). They must draw inferences about appropriate modes of participation by using information provided by the context. Even when rules are stated explicitly by the teacher, they have an "open horizon of meaning" since teachers and students must interpret rules in the constantly changing context of the classroom (Mehan, 1979, p. 163). Mehan's (1979) general conclusion about the role of social cognition in student behavior is summarized

in the following quote:

> Successful participation in the culture of the classroom involves the ability to relate behavior, both academic and social, to a given classroom situation in terms of implicit rules. This involves going beyond the information given in verbal instructions to understand the teacher, linking particular features to general patterns by filling in contextual information. (p. 170).

Social-Cognitive Outcomes of Schooling

In this section, we will first discuss Cicourel's description of socialization in general. This will be followed by an examination of one ethnomethodological attempt to study socialization in the classroom.

According to Cicourel, the aim of socialization is to achieve interactional competence. As previously noted, this concept reflects the influence of generative-transformational linguistics (Chomsky, 1965). Interactional competence refers to the ability to "employ hierarchical systems of knowledge (values, moral principles, laws) and higher-order predicates embedded in complex systems of representation, while being sensitive to local conditions of social interaction" (Cicourel, 1978, p. 276). In order to achieve membership in some group or adult status within a culture, the child must learn the socio-cultural rule systems which people use to interpret social events. The acquisition of this body of knowledge or social facts "amounts to a cognitive organization that provides a continual sense of social structure" (O'Keefe, 1979, p. 191).

According to Cicourel, the transmission of culture must be traced to everyday interactions between adults and children in which children are exposed to abstract norms or rules. In other words, "adults or parents routinely expose their children to a normative order that goes beyond the confines of the children's limited linguistic and sociocultural environment" (Cicourel, 1978, p. 254). Cicourel also emphasizes situations in

which children are expected to participate in idealized, adultlike conditions of social interaction. In these contexts, socialization experiences are likely to occur because children are unable to meet adult expectations and normative practices.

There have been few attempts to apply this account of socialization to educational settings. Mehan's study of a first grade classroom, which was discussed in the previous section, provides an example of such an attempt.

In this investigation, the classroom was likened to a culture or community. Like Cicourel, Mehan employed the concept of interactional competence. However, unlike Cicourel, Mehan stressed the interactional nature of effective participation in the classroom community and placed less emphasis on the cognitive, interpretive aspects of interactional competence. According to Mehan (1979), interactional competence can be analyzed along the following two dimensions: communicative skills and interpretive skills. In addition, he argues that in order to participate effectively in classroom lessons students must be able to integrate interactional form and academic content. Over the course of the school year Mehan found a steady improvement in the interactional competence of the students in his study.

This discussion of the ethnomethodological perspective can be summarized as follows. Ethnomethodologists such as Cicourel and Mehan have offered a number of interesting hypotheses about social cognition. Unfortunately, there have been few attempts to validate these ideas. Until ethnomethodologists find ways to draw convincing inferences about the social-cognitive processes of people, this perspective is likely to have minimal impact on our knowledge of classroom life.

## Conclusions

Near the beginning of this paper, the following question was posed: In what ways can the basic knowledge of social cognition which exists in the social sciences be applied to the study of classroom life? In thinking about this question, the EcoTheory staff has focused on two basic applications of the social-cognitive perspective. First, we have begun to examine the ways in which social-cognitive processes mediate the behavior of students and teachers in the classroom. Second, we have begun to explore some of the social-cognitive outcomes of non-technical socialization. This basic distinction has been used to organize the preceding discussion of four approaches to the study of social cognition. In the following two sections, tentative conclusions will be drawn about each of these issues.

### Social-Cognitive Processes Mediating Classroom Behavior

The aim of this section is to answer the following question: How do social-cognitive processes mediate the behavior of students and teachers in the classroom? Several answers to this question have been examined in this paper.

The most thoroughly developed analysis of how social-cognitive processes mediate classroom behavior has been proposed by Weiner (1974, 1979). According to Weiner, students' level of academic motivation will vary depending on their typical attributions for success and failure. Although Weiner's theory has received a great deal of support from laboratory studies, there have been few successful attempts to validate his ideas in classroom settings. As discussed earlier in this paper, the EcoTheory project has encountered conceptual as well as methodological problems when attempting to use Weiner's theory to study student participation. Because of these problems, it may be

necessary for educational researchers to look at less developed approaches to academic motivation (e.g., Nicholls, 1979).

In contrast to Weiner's analysis, other answers to the mediation question have been less clearly articulated and have rarely been tested empirically. In general, these alternative approaches assume that students and teachers are constantly interpreting the always changing context of the classroom and the effects of classroom situations are mediated by these interpretations. This basic assumption is endorsed by most social cognitivists and is supported by evidence from studies conducted outside the classroom. Within recent years it has become increasingly clear to psychologists that in order to explain relationships between social situations (stimuli) and observed behavior (responses), it is often necessary to consider people's social-cognitive processes (e.g., Clifford, 1979; Miller and Norman, 1979).

Although it is reasonable to assume that the effects of environmental variables on social behavior are mediated by subjective interpretations, this general premise will have little heuristic value for educational researchers until it is translated into specific hypotheses that can be tested in classroom settings. There are several reasons why it has been difficult to conceptualize specific, testable links between social cognition and behavior in the classroom. Perhaps the most important reason is that social cognitivists have often focused on social-cognitive processes rather than on the effects of these processes on behavior. This is especially true of structural-developmentalists and basic researchers working within the information-processing tradition. Although a great deal is known about the ways in which people interpret social situations, social cognitivists have had more trouble conceptualizing and testing relationships between social cognition and behavior. This general conclusion, based on a review

of basic research in the social sciences, applies equally well to recent studies of teacher thinking (Clark and Yinger, 1979).

There is a second reason why it has been difficult to generate specific hypotheses which can serve to direct educational studies of classroom processes. There is a basic methodological gap between basic research on social cognition and studies of classroom life. With the exception of ethnomethodology, the major social-cognitive perspectives have not based their conclusions on naturalistic observations. Attribution theorists and information-processing psychologists have relied almost exclusively on the experimental method. In the case of structural-developmental research, the primary methodology has been the clinical interview. In contrast, classroom research has depended heavily on the observation of natural behavior. In order to bridge this methodological gap, educational researchers are going to have to do some creative theorizing regarding the links between social-cognitive processes and classroom behavior as well as developing appropriate methods for evaluating those hypotheses.

In sum, applying the four social-cognitive perspectives to the study of teacher and student behavior in the classroom will not be straight-forward. However, given the importance attached to social cognition by so many different scholars within the social sciences, such applications should be well worth the effort.

Social-Cognitive Outcomes of Schooling

One of the basic arguments of this paper is that educational researchers have neglected the non-technical aspects of socialization (Bidwell, 1972). Although we know a great deal about the technical skills acquired by students, little is known about the effects of schooling on students' sociocultural knowledge. In order to study non-technical socialization, educational

researchers must address two interrelated questions. These are discussed below.

First, what are the social-cognitive outcomes of schooling? This question focuses on the non-technical, cognitive products of students' schooling experiences. A number of different conceptualizations of social-cognitive outcomes have been discussed in this paper. The following seem potentially useful for studying the effects of schooling on the social thinking of students: societal concepts (Furth, 1980; Turiel, 1978 a, b) including conceptions of adult authority (Damon, 1977) and social-conventions (Turiel, 1978 a, b); knowledge structures which include theories and schemas (Nisbett and Ross, 1980); attributions for success and failure such as ability, effort, luck, and task difficulty (Weiner, 1974, 1979); endogeneous versus exogeneous attributions for academic behavior (Nicholls, 1979); interpretive procedures (Cicourel, 1973, 1978); and interactional competence (Cicourel, 1974; Mehan, 1979). Although these social-cognitive outcomes have been emphasized in this paper, an exhaustive review of the literature on social cognition would probably uncover other important products of the socialization process as it takes place in various social settings.

Unfortunately, little is known about the social-cognitive outcomes of schooling. All of the constructs listed in the previous paragraph have been proposed by basic researchers interested in social cognition. There have been few attempts to use these concepts to examine the non-technical knowledge acquired by students while they are at school. It is likely that applying the four social-cognitive perspectives to this important problem will be less problematic, both conceptually and methodologically, than trying to demonstrate how classroom behavior is mediated by the information-processing activities of students and teachers.

A second question which must be addressed by educational researchers interested in non-technical socialization is the following: How do classroom processes influence students' social thinking? In contrast to the first question which directs attention to the description of what is learned in classrooms, this second question focuses on explaining those outcomes.

Interestingly, more is known about the social processes which occur in classrooms than about the effects of those social processes on the thinking of students. This is probably due to the fact that there are a number of well-developed strategies for examining what goes on in classrooms. Consequently, it has been fairly easy for educational researchers to apply social-cognitive concepts to the social side of classroom life (e.g., Dweck, et al., 1978; Swarthout, 1979). Although these researchers have speculated on the links between these social processes and various cognitive outcomes, there have been few attempts to empirically test these hypotheses.

It should also be noted that most of the conceptualizations of the relationship between classroom processes and cognitive outcomes are really quite primitive and speculative. That is, educational researchers lack a good theory for directing research on this issue. Such a theory must be both social and cognitive. On the social side, it must consider the contextual, environmental factors that influence students' thinking. On the cognitive side, it must explain how students interpret educational settings. EcoTheory, by looking at both sides of social cognition, is likely to provide a more thorough conceptualization of non-technical socialization.

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